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EXAMINER

LEE, BENJAMIN C

ART UNIT PAPER NUMBER

2632

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/730,327

Applicant(s)

RAST, RODGER H.

Examiner

Benjamin C. Lee

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10, 12-22, 25, 26, 28-42, 44-49, 60, 61 and 67-102 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) See Continuation Sheet is/are rejected.
- 7) ☒ Claim(s) 20, 25, 26, 36-38, 61, 73, 78, 79, 82, 90, 93-95 and 100 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Claim Status

1. Claims 1-10, 12-22, 25-26, 28-42, 44-49, 60-61 and 67-102 are pending.

Claim Rejections - 35 USC § 112

2. Claim 47 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, as stand in the previous Office action.

1) In claim 47, how is the driver alerted to the severe roadway conditions should be further defined, since no such information has been claimed to be received or generated by the controller or the system in general.

Claim Rejections - 35 USC § 103

3. Amended claims 1, 5, 60, 67, 72, 75-76, 80-81, 83-89, 91-92, 96-97, 99 and 101-102 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao (US pat. #5,717,377) in view of Rahman (US pat. #6,121,896) and Dunning et al. (US pat. #6,765,495).

1) In considering amended claims 1, 5, 60, 67, 72, 75-76, 80-81, 83-84, 86, 96-97, 99 and 101-102:

Gao disclose the claimed anti-collision system for use within a motorized vehicle (Abstract), comprising: means for sensing the urgency with which the brakes of a first/leading vehicle are being activated (deceleration sensor 12 of Fig. 1 having 3 level outputs 24a-24c, which detects deceleration including those resulting from brake activation according to col. 1, lines 34-50; col. 2, lines 28-35 and col. 5, lines 1-4) and generating a first alert signal (output of

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sensor 12 in Figs. 1 & 3) in response thereto; a visual indicator directed rear-wardly of said first vehicle and configured to respond to said first alert signal (rear brake lamp assemblies 26a-26c of Fig. 1; light bulbs 28, and variable brightness intensity signal according to col. 5, lines 1-4); and means for rear-wardly communicating said first alert signal as a second alert signal of braking as a wireless alert signal (infrared transmitter 40), said second alert signal adapted for receipt by anti-collision system within a vehicle following said first vehicle toward providing advanced warning to a driver for the avoidance of collisions (Fig. 3 and col. 5, lines 12-20).

Rahman teaches equipping each vehicle with both wireless receiver (R) and transmitter (T) for bi-directional communication so that multiple following vehicles can be warned of a deceleration condition of a leading vehicle such as from brake switch (30 activation (Figs. 1 & 3), and furthermore that the wireless alert signal can be either an infrared or radio frequency signal as alternatives (col. 2, lines 42-43).

Dunning et al. teaches a similar inter-vehicle braking condition warning system that includes in the transmitted alert signal data the leading vehicle's braking pressure, vehicle position (using GPS) for qualifying/weighing the transmitted alert signal (col. 8, line 28 to col. 9, line 45 whereby the receiving vehicle can compare the GPS positions to determine relevance), and signal retransmission control data for limiting the dissemination of said alert signals (ascertaining applicability and restricting/restricting the dissemination according to col. 8, line 28 to col. 9, line 45).

In view of the teachings by Gao and Rahman, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to equip each vehicle in an anti-collision warning system such as taught by Gao with both transmitter and receiver such as taught

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by Rahman so that multiple following vehicles can be alerted of, and benefited from, the detected deceleration of the leading vehicle, whereby the wireless signal can take on a radio frequency signal as an alternative to infrared signal as taught by Rahman based on considerations such as concerns with interference nature of sunlight with infrared receivers.

Furthermore, in view of the additional teaching of Dunning et al., it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include the vehicle position and retransmission control data for limiting the dissemination of the alert signals in the transmitted signal from the lead vehicle as taught by Dunning et al. in Gao and Rahman in order to positively ascertaining applicability of the received data to the receiving vehicle so that erroneous analysis and alert generation as a result of irrelevant data is avoided.

2) In considering amended claim 85, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in 67, except:

--the claimed said communications link operates on a time slot basis, with said alert signal generation synchronized to the farthest forward, primary vehicle generating said alert signal transmissions, whereby overlapping transmissions are prevented.

However, Rahman teaches the desirability to ensure signal transmission is not erroneously received (col. 2, lines 36-42). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention that in order to prevent erroneous signal reception such as due to interference and transmission signal collision well recognized in the communications art, a well known time-slot transmission protocol such as Time Division Multiplexing in which transmissions, with periodic transmissions/repetitions for ensuring reception, and with the period between transmissions being temporarily offset to prevent signal

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collision, are assigned with particular time slots can be implemented with the event signal transmission in the system taught by Gao, Rahman and Dunning et al. such that multiplicity of time slots selected for event signal transmission by said controllers within anti-collision system of additional vehicles proximal to said first vehicle. Such communication protocol for preventing signal interference and collision, and for ensuring data reception, are well known in the communications art in general, and one skilled in the art is motivated to use it in the system taught by Gao, Rahman and Dunning et al. as indicated above.

3) In considering amended claim 87, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in 86, including:

--the claimed additional alert condition including a signal from emergency vehicles (col. 2, lines 32-36 of Dunning et al.)

4) In considering amended claim 88, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in 67, including:

--the claimed said controller is adapted for mapping causative events into multiple categories and/or severity levels is met by Dunning et al. (col. 9, lines 18-50).

5) In considering amended claim 89, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in 88, including:

--the claimed said severity levels include a level associated with crash events associated with accident that has occurred is met by Dunning et al. (col. 7, lines 6-10) and levels of hard braking is met by Gao (braking urgency).

6) In considering amended claims 91-92, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in 67, including:

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--the claimed means for registering following distance to a preceding vehicle which is operably coupled to said controller to activate vehicle braking is met by Dunning et al. (col. 7, lines 42-43 and Fig. 3).

4. Amended claim 74 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Dunning et al. and Wickord et al. (US pat. #3,876,940).

1) In considering claim 74, Gao, Rahman and Dunning et al., made obvious all of the claimed subject matter as in claim 72, while:

Wickord et al. Teaches the known use of sound muting circuit controlled by the onboard controller for reducing sound being generated within the vehicle such that audio annunciator for annunciating a potential collision condition derived from alert signals received from another vehicle's transmission can be easily heard (Abstract). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include such muting circuit of Wickord et al. in Gao, Rahman and Dunning et al. for the same advantages.

5. Amended claims 2-3, 68-71 and 98 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Dunning et al. and Fenk (US pat. # 6,100,799).

1) In considering claims 2-3, Gao, Rahman and Dunning et al., made obvious all of the claimed subject matter as in amended claim 1:

Gao discloses transmission of vehicle deceleration data and Dunning et al. teaches the transmission of braking pressure and deceleration to other vehicle (col. 8, line 30), while:

Fenk teaches that detection of urgency/intensity of vehicle deceleration can be implemented using sensor for detecting brake pedal pressure, force (which includes acceleration) or speed as well as other deceleration (col. 4, lines 6-13).

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In view of the teachings by Gao, Rahman, Dunning et al. and Fenk, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that deceleration urgency detected by the deceleration sensor in the system of Gao, Rahman and Dunning can alternatively or additionally be implemented using a known at least in part by a known brake pedal pressure or acceleration sensor such as taught by Fenk to achieve the same function of sensing the urgency of brake acceleration whereby the choice to use such brake pedal acceleration or pressure sensor can be dictated by considerations such as cost and availability of parts at the time of implementation.

2) Regarding claims 68-69, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in claim 67, plus the teaching of Fenk in the consideration of claims 2-3, respectively.

3) Regarding claim 70, Gao, Rahman, Dunning et al. and Fenk made obvious all of the claimed subject matter as in claim 69, plus the consideration of claim 68, whereby:

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use more than one of the braking sensors (acceleration and brake pedal pressure) together for redundancy in Gao, Rahman, Dunning et al. and Fenk in order to ensure accurate braking detection.

4) Regarding claim 71, Gao, Rahman, Dunning et al. and Fenk made obvious all of the claimed subject matter as in claim 67, plus the consideration of claim 70.

5) Regarding claim 98, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in claim 97, plus the teaching of Fenk in the consideration of claims 2-3.

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6. Amended claims 6-10, 14-19, 21, 28-30, 32-35, 39, 44-46, 48-49 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman and Fenk.

1) In considering amended claims 6-10 and 14, Gao and Rahman discloses all of the claimed subject matter as indicated above in the consideration of claim 1, including:

a) (claim 6) claimed activation of event indicators within secondary vehicles (44 in Fig. 3 of Gao);

while:

b) (claims 7-10) claimed said brake-pedal pressure or accelerations sensor is mounted on the brake pedal, or within the linkages connecting to the brake pedal are inherently met by Fenk which teaches that detection of urgency/intensity of vehicle deceleration can be implemented using sensor for detecting brake pedal pressure, force (which includes acceleration) or speed as well as other deceleration (col. 4, lines 6-13).

In view of the teachings by Gao, Rahman, and Fenk, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that deceleration urgency detected by the deceleration sensor in the system of Gao and Rahman can alternatively or additionally be implemented using a known at least in part by a known brake pedal pressure or acceleration sensor such as taught by Fenk to achieve the same function of sensing the urgency of brake acceleration whereby the choice to use such brake pedal acceleration or pressure sensor can be dictated by considerations such as cost and availability of parts at the time of implementation.

2) In considering amended claim 15, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 14, wherein:

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--the claimed communications link is configured with a communications protocol in which a multiplicity of senders and signal regenerators are synchronized to the event being generated from a primary signal generator located the farthest forward within a group of vehicles is met by Figs. 1 and 3 of Rahman in which a vehicle receives transmitted signals from the farthest forward vehicle primary signal generator for transmission to other vehicles further down the communication chain in sequence constitutes the claimed communication protocol in which the multiplicity of senders and signal regenerators are synchronized to the event being generated from said primary signal generator.

3) In considering amended claims 16 & 18-19, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in 14, plus the consideration of claim 85 above.

4) In considering amended claim 17, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 16, plus Figs. 1 and 3 of Rahman.

5) In considering amended claim 21, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, including:

--the claimed said controller is configured to encode multiple discrete levels of severity data within the event signal for communication to said secondary vehicles (col. 6, lines 19-25 of Gao).

6) In considering amended claims 28-29, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, whereby:

--Rahman teaches that in addition to the brake deceleration detector 30, a "problem sensor 33" (Fig. 3) defined as a sensed condition which is likely to decrease the forward speed of the vehicle (col. 4, lines 51-65) is operably connected to said controller and configured to

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generate a problem event signal in response to detection of the problem, while Gao teaches the use of a deceleration sensor 12 that senses vehicle deceleration resulting from various conditions including braking and inherently a crash event. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention that a well known crash sensor in a vehicle constitutes a specific example of the “problem sensor” of Rahman according to its definition, and therefore, such crash sensor, such as that taught by Gao, can specifically be included as a further sensor in a system such as taught by Gao, Rahman and Fenk to cover a specific crash problem that would slow down/decelerate the vehicle.

7) In considering amended claim 30, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 28, whereby:

--it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that various crash sensors known in the vehicle crash detection art, such as that comprising a signal generated by airbag circuitry within the vehicle which is activated in response to airbag deployment, can be used to provide the function of the crash sensor in a system such as taught by Gao, Rahman and Fenk so that additional cost associated with a separate crash sensor can be saved since such airbag system already exists in modern vehicles.

8) In considering amended claims 33-34, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, including:

--the claimed event indicator located in said secondary vehicles is adapted to provide a visual/audio indication of said alert signal to the drivers of said secondary vehicles (26, 44 of Gao; 31, 32 of Rahman).

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9) In considering amended claim 35, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, wherein:

--since the transmitted signal of Gao includes the severity/intensity level of the event, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to make use of such level information to provide feedback as to the importance of the alert to the drivers of said secondary vehicles in a system such as taught by Gao, Rahman and Fenk.

10) In considering amended claim 39, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, including:

--the speed sensor as claimed is met by 27, 26, 24 in Fig. 3 and corresponding disclosure of Rahman.

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include a known speed dependent alerting feature taught by Rahman in a system such as taught by Gao, Rahman and Fenk so that confusion does not result from unnecessary alerts.

11) In considering amended claims 44 and 48, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, wherein:

Gao teaches that upon receipt of an event signal over the communications link the controller is capable of generating a signal to the vehicle system to automatically decelerate the vehicle so that the car can begin the decelerate immediately upon receipt of the event signal (col. 5, lines 16-20). It would have been obvious to one of ordinary skill in the art at the time of the claimed invention : 1) that in situations where the cruise control is already on in a vehicle equipped with a system such as taught by Gao, Rahman and Fenk, automatically decelerating the

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vehicle can be implemented by generating a signal to the cruise control for releasing the pressure on the accelerator pedal; 2) to implement such automatic deceleration by activating the automatic braking mechanism by the controller.

12) In considering amended claims 45-46, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, wherein:

Malfunction/error detection or self-diagnostics features to record keeping and for disabling at least a portion of an operation routine such as by shut-down, disable or reset, upon error detection of the controller so as to prevent unintended control/command and for proper maintenance and diagnostics have been well known in controllers and other routine-driven devices/systems. It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include such a malfunction/error detection, recordation and shutting down feature for the controller in a system such as taught by Gao, Rahman and Fenk to prevent unintended and erroneous controller operations/outputs when such errors have been detected, as well as provide helpful record for diagnostic and maintenance purposes.

13) In considering amended claim 49, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, plus the consideration of claim 48 above, wherein:

Fenk teaches that vehicle deceleration can also be detected by accelerator/gas pedal operation as an alternative to brake pressure sensor (col. 4, lines 5-14).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include such an accelerator pedal operator sensor such as taught by Fenk such as in the form of an accelerator pedal pressure sensor in a system such as taught by Gao, Rahman and

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Fenk so that hard deceleration can be detected in a timely manner for improved anti-collision safety since braking is preceded by abrupt lifting off of the accelerator pedal.

7. Amended claims 32 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Fenk and Dunning et al.

1) In considering amended claims 32, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, while:

Dunning teaches a similar system that includes communication of encoded direction of travel data from a direction sensor in the event signals in addition to the deceleration data (col. 5, lines 43-61).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include encoded direction of travel (turning) data as taught by Dunning et al. in the event signals communicated in Gao, Rahman and Fenk so that following vehicles can be warned of impending deceleration of the vehicle ahead that accompanies the intended turning operation.

2) In considering amended claim 40, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, plus the teaching of Dunning in the consideration of claim 5 above.

8. Amended claims 12 and 77 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Fenk and Yoshino (US pat. #4,107,647).

1) Regarding claim 12, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, while:

Yoshino teaches the known use of modulating the visual indicator on and off for improved recognition in response to detected urgency of brake pedal operation (see disclosure of Fig. 5).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include such modulation taught by Yoshino in a system such as taught by Gao, Rahman and Fenk for improved recognition of the visual indicator for improved safety.

2) Regarding claim 77, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 75, plus the consideration of claim 12 further in view of Yoshino.

9. Amended claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Fenk and Donnelly et al. (US pat. #6,076,028).

1) In considering amended claim 42, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, plus the consideration of claim 30, while:

Donnelly et al. teaches configuring a vehicle communication link/channel for transmitting significant event signals such as collision event signals which are capable of being received by a properly configured-receiver personnel so that personnel may be dispatched to the scene (Fig. 1A-1B).

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include a dispatch communication feature such as taught by Donnelly et al. in a system such as taught by Gao, Rahman and Fenk so that when a crash event has been detected, help can be dispatched for improved safety to vehicle occupants. Furthermore, instead of direct communication between a vehicle system and the remote dispatch center, well known Highway Information System type road-side communications systems including road-side call box type

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communicators can be utilized as a relay or repeater to help deliver the communicated signal to the dispatch center, especially where roadway locations are not covered by cellular communication.

10. Amended claims 31 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Fenk and Yanagi (US pat. #6,278,360).

1) In considering amended claim 31, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, whereby:

--Rahman teaches that in addition to the brake deceleration detector 30, a “problem sensor 33” (Fig. 3) defined as a sensed condition which is likely to decrease the forward speed of the vehicle (col. 4, lines 51-65) is operably connected to said controller and configured to initiating event signal generation by said controller in response to sufficient amount of detected sensor output and of conditioning the response of the controller.

In the same art, Yanagi teaches a vehicle anti-collision warning system that uses swerve detection (22, 23, 24 in Fig. 1). In view of the teachings by Gao, Rahman, Fenk and Yanagi, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that a known swerve detector such as taught by Yanagi in a vehicle constitutes a specific example of the “problem sensor” of Rahman according to its definition, and therefore, such swerve sensor can specifically be included as a further sensor in a system such as taught by Gao, Rahman and Fenk to cover a specific condition/problem that would slow down the vehicle in order to warn of following vehicle drivers for improved anti-collision safety.

2) In considering amended claim 41, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in claim 6, whereby:

--Rahman teaches that in addition to the brake deceleration detector 30, a “problem sensor 33” (Fig. 3) defined as a sensed condition which is likely to decrease the forward speed of the vehicle (col. 4, lines 51-65) is operably connected to said controller and configured to initiating event signal generation by said controller in response to sufficient amount of detected sensor output and of conditioning the response of the controller.

In the same art, Yanagi teaches a vehicle anti-collision warning system that uses range detection (10 in Fig. 1) as claimed for detecting impending crash situations. In view of the teachings by Gao, Rahman, Fenk and Yanagi, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention that a known range detection used for detecting impending crash situations such as taught by Yanagi in a vehicle constitutes a specific example of the “problem sensor” of Rahman according to its definition, and therefore, such range detection device can specifically be included as a further sensor in a system such as taught by Gao, Rahman and Fenk to cover a specific condition/problem that would slow down the vehicle in order to warn of following vehicle drivers for improved anti-collision safety.

11. Amended claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Dunning et al. and Sendowski (US pat. #6,225,896).

1) In considering claim 4, Gao, Rahman and Dunning et al. made obvious all of the claimed subject matter as in amended claim 1, while:

Sendowski teaches the known use of reverse lights of a vehicle as visual indicator of deceleration warning being seen from behind the vehicle to provide a clear, self-explanatory, sharp and timely warning to a following driver to slow down (Abstract; Figs. 1-8).

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In view of the teachings by Gao, Rahman, Dunning and Sendowski, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use the vehicle reverse lights such as taught by Sendowski to implement the visual indicator in a system such as taught by Gao, Rahman and Dunning to provide a clear, self-explanatory, sharp and timely warning to a following driver to slow down.

12. Amended claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Fenk and Sendowski.

1) In considering claim 13, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in amended claim 6, while:

Sendowski teaches the known use of reverse lights of a vehicle as visual indicator of deceleration warning being seen from behind the vehicle to provide a clear, self-explanatory, sharp and timely warning to a following driver to slow down (Abstract; Figs. 1-8).

In view of the teachings by Gao, Rahman, Fenk and Sendowski, it would have been obvious to one of ordinary skill in the art at the time of the claimed invention to use the vehicle reverse lights such as taught by Sendowski to implement the visual indicator in a system such as taught by Gao, Rahman and Fenk to provide a clear, self-explanatory, sharp and timely warning to a following driver to slow down.

13. Amended claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Gao in view of Rahman, Fenk and Beymer (US pat. #5,424,726).

1) In considering claim 22, Gao, Rahman and Fenk made obvious all of the claimed subject matter as in amended claim 6, while:

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Beymer teaches that the controller is configured to encode identification data allowing event signals generated from different vehicles to be distinguished from one another (col. 8, line 65 to col. 9, line 44, whereby the encoded data identifies whether a preceding vehicle is braking, whether belonging in a chain, etc.)

It would have been obvious to one of ordinary skill in the art at the time of the claimed invention to include the feature of encoding the identification data such as taught by Beymer in a system such as taught by Gao, Rahman and Fenk so that more specific information can be discerned by the following systems and users for improved situational awareness for improved anti-collision safety that is the purpose of the invention.

Allowable Subject Matter

14. Claims 20, 25-26, 36-38, 61, 73, 78-79, 82, 90, 93-95 and 100 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

15. Claim 47 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

16. Applicant's arguments with respect to the claims above have been considered but are moot in view of the new ground(s) of rejection as a result of discovery of new prior art. In particular, new reference of Dunning et al. was issued as a patent only after the previous Office action. Every limitation of the claims have been clearly addressed above as being either met or obvious over the prior art, including motivation for any combination of prior art. Accordingly,

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issues raised in Applicant's Remarks are either moot in view of the new grounds of rejection, or their answers clearly apparent from the above rejection.


Conclusion

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Benjamin C. Lee whose telephone number is (571) 272-2963.

The examiner can normally be reached on Mon -Fri 11:00Am-7:30Pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel Wu can be reached on (571) 272-2964. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Primary Examiner
Art Unit 2632

B.L.